

What Is Claimed Is:

1. A recording/reproduction device for digital broadcasts comprising:
means for receiving that receives a transport stream in which a
5 plurality of services are packet-multiplexed;
means for conversion that selects packets relating to a desired service
from the received transport stream and outputs these as a converted stream;
means for recording that records the converted stream from the
conversion means on a recording medium;
10 means for reading that reads the converted stream recorded on the
recording medium; and
means for restoration that receives the converted stream from the
means for reading and that reproduces and outputs service content.

15 2. The recording/reproduction device of claim 1 wherein said means for
conversion generates a converted stream by selecting, of packets relating to
the desired service in the transport stream, an elementary stream and PAT
and PMT packets.

20 3. The recording/reproduction device of claim 1 wherein said means for
conversion also supplies to the means for recording the environment
information when the converted stream is generated and the means for
recording records this on a recording medium as recording environment
information together with the converted stream or as part of the converted
25 stream; and

the means for restoration compares the reproduction environment
when the converted stream from the means for reading is reproduced with
the recording environment information recorded on the recording medium,
and alters the content of reproduction control in accordance with differences
30 of these two environments.

4. The recording/reproduction device of claim 3 wherein the means for conversion supplies recording time information indicating that the time at which recording was performed to the recording means as recording environment information; and

5 the means for restoration compares reproduction time information indicating the time at which reproduction is performed with recording time information recorded on the recording medium and alters the content of reproduction control in accordance with the difference of these two.

10 5. The recording/reproduction device of claim 4 wherein the means for conversion acquires recording time information based on the TDT, TOT or PCR in the transport stream and supplies this to the means for recording.

15 6. The recording/reproduction device of claim 3 wherein the means for conversion supplies recording place information indicating the place where the recording was made to the means for recording, as recording environment information; and

20 the means for restoration compares the reproduction place information indicating the place where reproduction is being performed with the recording place information recorded on the recording medium and alters the content of reproduction control in accordance with differences of these two.

25 7. The recording/reproduction device of claim 3 wherein the means for conversion supplies recording device information indicating the device with which recording was performed to the recording means as recording environment information; and

30 the means for restoration compares reproduction device information indicating the device with which reproduction is performed with recording device information recorded on the recording medium and alters the content of reproduction control in accordance with the difference of these two.

8. A recording medium on which are recorded an elementary stream of video or audio or video/audio and packet-multiplexed data of PAT and PMT selected from packets relating to a desired service in a transport stream wherein said PMT is constituted by extracting from the PMT information in the transport stream only information associated with said elementary stream relating to the desired service.

9. The recording medium according to claim 8 on which are recorded packet-multiplexed data, in which, further, recording environment information is recorded in packet-multiplexed form.

10. A transmission device that transmits a transport stream including content data wherein said transport stream includes instructions or data for changing the reproduction control content by comparing recording environment information and reproduction environment information.

11. A method of recording/reproduction wherein a transport stream is received in which a plurality of services are packet-multiplexed; packets relating to a desired service are selected from the received transport stream

to form a converted stream;

this converted stream is recorded on a recording medium;

the converted stream that is recorded on the recording medium is read;

and

this converted stream is received and used to reproduce and output service content.

12. A method of communication in which, at the transmission end, a transport stream including service content is transmitted;

at the receiving end, packets relating to a desired service are selected from the transport stream that is received and used to generate a converted stream, which is recorded on a recording medium;

the service content is restored in receiving mode, in accordance with the transport stream that has been received, or, in reproduction mode, in accordance with the converted stream that has been read from said recording medium; and,

5 at the receiving end, the content that is output is altered depending on whether [the current mode] is reception mode or reproduction mode.

13. A reception/recording/reproduction device for digital broadcasts comprising:

10 means for reception that receives a packetized transport stream;

means for conversion that selects packets relating to a desired service from a received transport stream and generates a converted stream;

means for recording that records a converted stream from the means for conversion on a recording medium;

15 means for reading that reads a converted stream recorded on a recording medium; and

means for restoration that, in reception mode, receives a transport stream from the means for reception and that, in reproduction mode, receives a converted stream from the means for reading, and that restores a service content signal;

in which said means for restoration alters the control content in accordance with the reproduction environment on reproduction.

14. The device of claim 13 wherein the means for restoration alters the content of the service content signal that is output, by altering the control content in accordance with the reproduction environment on reproduction.

15. The device of claim 14 wherein said reproduction environment is the reproduction time.

16. The device of claim 14 wherein said reproduction environment is the

place of reproduction.

17. The device of claim 14 wherein said reproduction environment is the device whereby reproduction is effected.

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18. A recording medium on which are recorded an elementary stream of video or audio or video/audio and packet-multiplexed data of PAT and PMT selected from packets relating to a desired service in a transport stream wherein said PMT is constituted by extracting from the PMT information in the transport stream only information associated with said elementary stream relating to the desired service, wherein said packet-multiplexed data includes conditions or instructions applied only on reproduction or conditions or instructions that are not applied only on reproduction.

19. A transmission device that transmits a transport stream including content data wherein said transport stream includes conditions or instructions applied only on reproduction or conditions or instructions that are not applied only on reproduction.

20. A transmission device that transmits a transport stream including content data wherein said transport stream includes a program/script which is of different control content depending on whether [the current mode] is reception mode or is left in reproduction mode.

21. A reception/recording/reproduction device for digital broadcasts comprising:

means for reception that receives a packetized transport stream including interactive control data for realizing an interactive capability;

means for conversion that selects packets relating to a desired service from a received transport stream and generates a converted stream including interactive control data;

means for recording that records a converted stream from the means for conversion on a recording medium;

means for reading that reads a converted stream recorded on a recording medium;

5 means for operator control handling that accepts a control input from an operator; and

means for restoration that, in reception mode, receives a transport stream from the means for reception and that, in reproduction mode, receives a converted stream from the means for reading, and that restores a service content signal including images for operator control purposes and that interactively alters the content of the service content signal that is output in accordance with control input from the operator based on interactive control data in this stream.

15 22. A digital reception device for digital broadcasts that receives a transport stream and that outputs data for recording for recording a desired service having interactive capability, comprising:

means for reception that receives a packetized transport stream including interactive control data for realizing interactive capability;

20 means for conversion that selects packets relating to a desired service from the received transport stream and that generates a converted stream including interactive control data; and

a data output terminal for recording that supplies the converted stream to a recording device.

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23. A digital recording device for digital broadcasts for receiving a transport stream and recording a desired service having interactive capability, comprising:

30 means for conversion that selects packets relating to a desired service from the transport stream and that generates a converted stream including interactive control data; and

means for recording that records the converted stream from the means for conversion on a recording medium.

24. A reproduction device for reproducing a service having interactive
5 capability by reading a converted stream recorded on a recording medium, comprising:

means for reading that reads a converted stream recorded on the recording medium;

10 means for operator control handling that receives a control input from an operator; and

means for restoration that receives a converted stream from the means for reading and restores a service content signal including images for operator control purposes and that interactively alters the content of the service content signal that is output in accordance with control input from
15 the operator, based on interactive control data in this stream.

25. A reception device for digital broadcasts comprising:

means for reception that receives a packetized transport stream containing interactive control data for realizing interactive capability;

20 a data input terminal for restoration for receiving a converted stream;

means for operator control handling that receives control input from an operator; and

means for restoration that receives a converted stream from the transport stream from the means for reception or the data input terminal for
25 restoration and that restores a service content signal containing images for operator control purposes and that alters in interactive fashion the content of the service content signal that is output, in accordance with control input from the operator, in accordance with interactive control data in this stream.

30 26. The device of claim 21 wherein, in said transport stream, a plurality of mutually associated interactive control data form a group, this group

being repetitively transmitted a plurality of times, and said interactive control data comprise data for display of control buttons having a display condition of selected condition or non-selected condition and comprise link information of the image data or display data associated with the control
5 buttons.

27. The device of claim 21 wherein the means for conversion, of the packets relating to the desired service in the transport stream, selects packets of an elementary stream, PAT, PMT and interactive control data,
10 and thereby generates a converted stream.

28. The device of claim 21 wherein the means for conversion, at a time point when the service that is recorded is discontinued, generates a converted stream in which control data indicating discontinuity are inserted.
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29. The device of claim 28 wherein the means for restoration, when it discovers, from the converted stream that is read, control data indicating discontinuity, does not perform interactive processing based on navigation data recorded prior to this control data indicating discontinuity.
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30. The reception/recording/reproduction device of claim 21 wherein the means for conversion also supplies, to the means for recording, the environment when the converted stream is generated and the means for recording records this as recording environment information on the
25 recording medium together with the converted stream or as part of the converted stream, and the means for restoration compares the reproduction environment when the converted stream is reproduced from the means for reading with the recording environment information recorded on the recording medium and alters the content of reproduction control in
30 accordance with the difference of the two environments.

31. The reception device of claim 22 wherein the means for conversion outputs the environment information when the converted stream is generated from the data output terminal for recording as part of the converted stream or together with the converted stream.

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32. The recording device of claim 23 wherein the means for conversion also supplies the environment information when the converted stream is generated to the means for recording as part of the converted stream or together with the converted stream, and the means for recording also records this environment information.

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33. The device of claim 24 wherein the means for restoration compares the reproduction environment when the converted stream from the means for reading is reproduced with the recording environment information recorded on the recording medium and alters the content of reproduction control in accordance with the difference of these two environments.

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34. The device of claim 30 wherein the means for restoration alters the content of reproduction control in accordance with whether or not the content of the service content signal that is output is interactively altered, based on the differences of said environments.

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35. The device of claim 30 wherein the means for restoration alters the content of reproduction control in accordance with whether or not some all of the instructions included in the interactive control data are executed.

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36. The device of claim 30 wherein the means for restoration alters the content of reproduction control by evaluating the difference of reproduction environment information and recording environment information in accordance with a condition included in the interactive control data.

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37. The device of claim 35 wherein there is further provided means for communication for performing communication with the outside and the means for restoration determines whether or not communication is performed by this means for communication in response to control input by an operator in accordance with the difference of said environments.

38. The device of claim 37 wherein there is further provided a log recording unit that records log information of communication performed by the means for communication in response to control input by the operator, and, in the log information recording unit, there are also recorded data for distinguishing communication in the reproduction mode or communication in the reception mode.

39. The device of claim 30 wherein said recording environment or reproduction environment are respectively the recording time or reproduction time.

40. The device of claim 30 wherein said recording environment or reproduction environment are respectively the recording time or reproduction time and the means for conversion acquires the recording time from the TDT or TOT or PCR in the transport stream and supplies this to the means for recording as recording time information.

41. The device of claim 30 wherein said recording environment or reproduction environment are respectively the recording time or reproduction time and there is further provided clock means that measures the current time, and the means for conversion acquires the recording time from the output of the clock means and supplies this to the means for recording as recording time information.

42. The device of claim 30 wherein said recording environment or

reproduction environment are respectively the recording time or reproduction time and there is further provided clock means that measures the current time, and the means for restoration acquires reproduction time information from the output of the clock means.

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43. The device of claim 30 wherein said recording environment or reproduction environment are respectively the place of recording or place of reproduction.

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44. The device of claim 30 wherein said recording environment or reproduction environment are respectively the device whereby recording was effected or the device whereby reproduction was effected.

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45. A reception/recording/reproduction device for digital broadcasts comprising:

means for reception that receives a transport stream including a program/script;

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means for conversion that selects packets relating to a desired service from a received transport stream and generates a converted stream including a program/script;

means for recording that records a converted stream from the means for conversion on a recording medium;

means for reading that reads a converted stream recorded on a recording medium;

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means for operator control handling that accepts a control input from an operator; and

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means for restoration that, in reception mode, receives a transport stream from the means for reception and that, in reproduction mode, receives a converted stream from the means for reading, and that restores a service content signal and that exercises control in accordance with the program/script in this stream; and

wherein the control content of said means for restoration is different in reception mode and reproduction mode, even when the same program/script is executed.

5 46. A reception/recording/reproduction device for digital broadcasts comprising:

means for reception that receives a transport stream including a program/script;

10 means for conversion that selects packets relating to a desired service from a received transport stream and generates a converted stream including a program/script;

means for recording that records a converted stream from the means for conversion on a recording medium;

15 means for reading that reads a converted stream recorded on a recording medium;

means for operator control handling that accepts a control input from an operator; and

20 means for restoration that, in reception mode, receives a transport stream from the means for reception and that, in reproduction mode, receives a converted stream from the means for reading, and that restores a service content signal and that exercises control in accordance with a program/script in this stream, in which:

25 said means for recording records the recording time point on a recording medium together with the converted stream or as part of the converted stream, and

said means for restoration, in reproduction mode, compares the current time point and the recording time point, and alters the content of control in accordance with this comparison.

30 47. A recording/reproduction device for digital broadcasts comprising:
a conversion circuit that selects packets relating to a desired service

from a transport stream including interactive control data for realizing an interactive capability and outputs these as a converted stream including interactive control data;

means for recording that records a converted stream from the
5 conversion circuit on a recording medium;

means for reading that reads a converted stream recorded on a recording medium;

a decoder that separates and outputs an elementary stream and interactive control data from the converted stream that is read;

10 a signal generating circuit that receives the elementary stream from the decoder and instructions from a control unit and that generates a service content signal;

a control unit that controls the operation of the decoder;

a recording unit wherein is recorded a basic program that determines
15 the operation of the control unit; and

an operator control handling unit that accepts a control input from the operator, in which

said basic program generates an image signal for control purposes based on the interactive control data and supplies this to the signal
20 generating circuit, and

interprets the control program or condition data included in the interactive control data and, based on control input from the operator, exercises control at least such as to alter the interactive control data that is separated by the decoder, and thereby makes the control unit perform
25 processing whereby an interactive service content signal is output from the signal generating circuit.

48. The recording/reproduction device of claim 47 wherein said recording unit records a converted stream from the conversion circuit on a
30 recording medium together with recording environment information, and said basic program furthermore compares the recording environment

information that is read from the recording medium with the reproduction environment, and interprets the control program or condition data included in the interactive control data, and thereby makes the control unit perform processing such as to alter the control content in respect of the decoder or
5 signal generating circuit or both of these in accordance with differences in these two environments.

49. A basic program recording medium wherein is recorded a basic program for controlling a recording/reproduction device comprising: a
10 conversion circuit that selects packets relating to a desired service from a supplied transport stream and outputs these as a converted stream including interactive control data; a recording unit that records a converted stream from the conversion circuit on a recording medium; means for reading that reads a converted stream recorded on a recording medium; a decoder that
15 separates and outputs an elementary stream and interactive control data from the converted stream that is read; a signal generating circuit that receives the elementary stream from the decoder and instructions from a control unit and that generates a service content signal; a control unit that controls the operation of the decoder; and an operator control handling unit
20 that accepts a control input from the operator;

the basic program which is recorded being for causing a control unit to perform processing whereby an image signal for control purposes is generated based on the interactive control data and is supplied to the signal generating circuit, and whereby the control program or condition data
25 included in the interactive control data is interpreted and, based on control input from the operator, control is exercised at least such as to alter the interactive control data that is separated by the decoder, thereby making the control unit perform processing whereby an interactive service content signal is output from the signal generating circuit.

30 50. The basic program recording medium of claim 49 in which recording

environment information is recorded on the recording medium and on which a basic program is recorded for causing the control unit to perform processing in which said basic program compares the recording environment information and reproduction information read from the recording medium, and interprets the control program or condition data included in interactive control data whereby the control content in respect of the decoder or signal generating circuit or both of these is altered in accordance with differences in said two environments.

51. A basic program recording medium wherein is recorded a basic program for controlling a recording/reproduction device comprising: a conversion circuit that selects packets relating to a desired service from a supplied transport stream and outputs these as a converted stream including a program/script; a recording unit that records a converted stream from the conversion circuit on a recording medium; means for reading that reads a converted stream recorded on a recording medium; a decoder that separates and outputs an elementary stream and data including a program/script from the converted stream that is read; a signal generating circuit that receives the elementary stream from the decoder and instructions from a control unit and that generates a service content signal; a control unit that controls the operation of the decoder; and a control handling unit that accepts a control input from the operator;

the basic program which is recorded being for interpreting portions contained in the program/script whose execution results are intended to be different depending on whether [the current mode] is reception mode or reproduction mode, so that the control content is made to be different depending on whether [the current mode] is reception mode or reproduction mode, respectively.

52. A recording medium on which are recorded packet-multiplexed data of PAT and PMT and interactive control data and at least a selected

elementary stream from packets relating to a desired service in a transport stream wherein said PMT is constituted by extracting from all the PMT information in the transport stream only information associated with said elementary stream relating to the desired service and said interactive control data constitutes a group of a plurality of interactive control data that are mutually associated, these groups being recorded in repetitive fashion a plurality of times.

53. The recording medium of claim 52 wherein, in addition, environment information of recording time is recorded.

54. A recording medium wherein is recorded a converted stream including interactive control data for performing control as interpreted by a basic program or jointly with said basic program in respect of a recording/reproduction device comprising: a conversion circuit that selects packets relating to a desired service from a supplied transport stream and outputs these as a converted stream including interactive control data; a recording unit that records a converted stream from the conversion circuit on a recording medium together with recording environment information; a reading unit that reads a converted stream recorded on a recording medium; a decoder that separates and outputs an elementary stream and control data from the converted stream that is read; a signal generating circuit that receives the elementary stream from the decoder and instructions from a control unit and that generates a service content signal; a control unit that controls the operation of the decoder; a recording unit that records said basic program whereby the operation of the control unit is determined; and an operator control handling unit that accepts a control input from the operator;

said interactive control data, interpreted by said basic program or jointly with said basic program, generating an image signal for control purposes and being supplied to the signal generating unit

whereby processing is made to be performed in which a service content signal having interactive capability is output from the signal generating circuit under control such that at least the interactive control data that are separated by the decoder are altered in accordance with control input from the operator.

55. The recording medium of claim 54 wherein said interactive control data, interpreted in said basic program or jointly with said basic program, furthermore compares the recording environment information read from the recording medium and reproduction environment, and performs processing such as to alter the control content in respect of the decoder or signal generating circuit, or both of these, based on the difference of said two environments.

56. A recording medium wherein is recorded a converted stream including a program/script for performing control as interpreted by a basic program or jointly with said basic program in respect of a recording/reproduction device comprising: a conversion circuit that selects packets relating to a desired service from a supplied transport stream and outputs these as a converted stream including a program/script; a recording unit that records a converted stream from the conversion circuit on a recording medium together with recording environment information; a reading unit that reads a converted stream recorded on a recording medium; a decoder that separates and outputs an elementary stream and a program/script from the converted stream that is read; a signal generating circuit that receives the elementary stream from the decoder and instructions from a control unit and that generates a service content signal; a control unit that controls the operation of the decoder; a recording unit that records said basic program whereby the operation of the control unit is determined; and an operator control handling unit that accepts a control input from the operator; and said program/script includes a portion

constituted so as to perform different control in the cases of reception mode and reproduction mode.

57. A method of reception/recording/reproduction wherein a packetized transport stream including interactive control data for realizing interactive capability is received;

a converted stream including interactive control data is generated by selecting packets relating to a desired service from the received transport stream;

the converted stream is recorded on a recording medium;

the converted stream recorded on the recording medium is read; and

a service content signal including images for control purposes is restored in reception mode by receiving the transport stream, and in reproduction mode by receiving a converted stream that is read from the recording medium, and the content of the service content signal that is output is interactively altered in accordance with control input from an operator, based on interactive control data in this stream.

58. The reception/recording/reproduction method of claim 57 wherein the environment when recording is recorded on the recording medium together with the converted stream or as part of the converted stream as recording environment information and, on reproduction, the reproduction environment when reproducing the converted stream that is read is compared with the recording environment information recorded on the recording medium and the content of reproduction control is altered in accordance with the difference of these two environments.

59. A transmission device whereby a transport stream is multiplexed and transmitted that includes interactive control data for realizing content data and interactive capability,

said interactive control data constituting a group of a plurality of

interactive control data that are mutually associated, this group being transmitted in repetitive fashion a plurality of times,

said interactive control data including an instruction to alter the processing content at the receiving end on comparing the recording environment when recording was performed with the reproduction environment when reproduction is performed.

60. A transmission method whereby a transport stream that includes interactive control data for realizing content data and interactive capability is multiplexed and transmitted,

said interactive control data constituting a group of a plurality of interactive control data that are mutually associated, this group being transmitted in repetitive fashion a plurality of times,

said interactive control data including an instruction to alter the processing content at the receiving end on comparing the recording environment when recording was performed with the reproduction environment when reproduction is performed.

61. A carrier wave that carries a transport stream including interactive control data for realizing content and interactive capability, said interactive control data constituting a group of a plurality of interactive control data that are mutually associated, this group being transmitted in repetitive fashion a plurality of times,

said interactive control data including an instruction to alter the processing content at the receiving end on comparing the recording environment when recording was performed with the reproduction environment when reproduction is performed.

62. A carrier wave that carries a transport stream including content and control data, said control data constituting a group of a plurality of control data that are mutually associated, this group being transmitted in

repetitive fashion a plurality of times,

said control data including a portion that executes different control content in reception mode and in reproduction mode.

5 63. A method of communication in which, at the transmission end, a transport stream including interactive control data for realizing interactive capability is transmitted;

10 at the receiving end, packets relating to a desired service are selected from the transport stream that is received and used to generate a converted stream including interactive control data, which is recorded on a recording medium;

15 the service content including images for control purposes is restored in receiving mode, in accordance with the transport stream that has been received, or, in reproduction mode, in accordance with the converted stream that has been read from the recording medium and the content that is output is interactively altered in accordance with control input from the operator based on interactive control data in this stream; and

20 instructions or data of different processing content are included in receiving mode and reproduction mode in the interactive control data that is transmitted at the transmission end.

64. A transmission device that multiplexes and transmits a transport stream including interactive control data for realizing content data and interactive capability,

25 said interactive control data constituting a group of a plurality of interactive control data that are mutually associated, this group being transmitted in a repetitive fashion a plurality of times,

30 said interactive control data including instructions or data of different processing content in reception mode and reproduction mode at the receiving end.

65. A reception/recording/reproduction device for digital broadcasts comprising:

means for reception that receives a packetized transport stream including interactive control data for realizing an interactive capability;

5 means for conversion that selects packets relating to a desired service from a received transport stream and generates a converted stream including interactive control data;

means for recording that records a converted stream from the means for conversion on a recording medium;

10 means for reading that reads a converted stream recorded on a recording medium;

means for operator control handling that accepts a control input from an operator; and

means for restoration that, in reception mode, receives a transport
15 stream from the means for reception and that, in reproduction mode, receives a converted stream from the means for reading, and that restores a service content signal including images for control purposes and that interactively alters the content of the service content signal that is output in accordance with control input from the operator based on interactive control
20 data in this stream,

in which said means for restoration alters the control content in accordance with the reproduction environment on reproduction.

66. A digital reception device for digital broadcasts that receives a
25 transport stream and that outputs data for recording for recording a desired service having interactive capability, comprising:

means for reception that receives a packetized transport stream including interactive control data for realizing interactive capability;

means for conversion that selects packets relating to a desired service
30 from the received transport stream and that generates a converted stream including interactive control data; and

a data output terminal for recording for supplying the converted stream to a recording device,

in which said interactive control data includes instructions or data that perform different processing to that on reception in the case of reproduction
5 from the recording device.

67. A digital recording device for digital broadcasts for receiving a transport stream and recording a desired service having interactive capability, comprising:

10 means for conversion that selects packets relating to a desired service from the transport stream and that generates a converted stream including interactive control data; and

means for recording that records the converted stream from the means for conversion on a recording medium,

15 in which said interactive control data recorded on the recording medium includes instructions or data that perform different processing to that on reception in the case of reproduction.

68. A reproduction device for reproducing a service having interactive
20 capability by reading a converted stream recorded on a recording medium, comprising:

means for reading that reads a converted stream recorded on the recording medium;

25 means for operator control handling that receives control input from an operator; and

means for restoration that receives a converted stream from the means for reading and restores a service content signal including images for control purposes and that interactively alters the content of the service content signal that is output in accordance with control input from the operator,
30 based on interactive control data in this stream,

in which the interactive control data that is recorded on the recording

medium includes a condition or instruction that is applied only on reproduction or a condition or instruction that is not applied only on reproduction.

5 69. A reception device for digital broadcasts comprising:

means for reception that receives a packetized transport stream containing interactive control data for realizing interactive capability;

a data input terminal for restoration for receiving a converted stream;

10 means for operator control handling that receives control input from an operator; and

means for restoration that receives a converted stream from the transport stream from the means for reception or the data input terminal for restoration and that restores a service content signal containing images for control purposes and that alters in interactive fashion the content of the service content signal that is output, in accordance with control input from the operator, in accordance with interactive control data in this stream,

15 in which the interactive control data in the converted stream includes a condition or instruction that is applied only on reproduction or a condition or instruction that is not applied only on reproduction.

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70. The device of claim 64 wherein, in said transport stream, a plurality of mutually associated interactive control data form a group and this group is repetitively transmitted a plurality of times and said interactive control data comprise data for displaying control buttons having a display condition of selected condition and unselected condition, and comprise link information of image data or display data associated with the control buttons.

25 71. The device of claim 65 wherein the means for conversion generates a converted stream by selecting, of packets relating to a desired service in the transport stream, packets of an elementary stream, PAT, PMT and interactive control data.

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72. The device of claim 65 wherein the means for restoration changes the control content in accordance with the reproduction environment by evaluating the reproduction environment on reproduction in accordance with
5 a condition included in the interactive control data.

73. The device of claim 72 wherein the means for restoration changes the content of reproduction control depending on whether or not the content that is output is interactively altered.

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74. The device of claim 72 further comprising means for communication for performing communication with the outside and wherein the means for restoration determines whether or not communication using this means for communication is performed in response to control input of an operator, in
15 accordance with the reproduction environment on reproduction.

75. The device of claim 74 further comprising a log recording unit that records log information of communication made by the means for communication in response to control input by an operator wherein the log
20 information recording unit records data identifying whether a communication is a communication made in reproduction mode or a communication made in reception mode.

76. The device of claim 72 wherein said reproduction environment is the
25 reproduction time.

77. The device of claim 72 wherein said reproduction environment is the place of reproduction.

78. The device of claim 72 wherein said reproduction environment is the
30 device whereby reproduction is effected.

79. A recording/reproduction device for digital broadcasts, comprising:

a conversion circuit that selects packets relating to a desired service from a transport stream including interactive control data for realizing an interactive capability and outputs these as a converted stream including interactive control data;

means for recording that records a converted stream from the conversion circuit on a recording medium;

means for reading that reads a converted stream recorded on a recording medium;

a decoder that separates and outputs an elementary stream and interactive control data from the converted stream that is read;

a signal generating circuit that receives the elementary stream from the decoder and instructions from a control unit and that generates a service content signal;

a control unit that controls the operation of the decoder;

a recording unit wherein is recorded a basic program that determines the operation of the control unit; and

an operator control handling unit that accepts a control input from the operator, in which

said basic program generates an image signal for control purposes based on the interactive control data and supplies this to the signal generating circuit, and

interprets the control program or condition data included in the interactive control data and, based on control input from the operator, exercises control at least such as to alter the interactive control data that is separated by the decoder, and thereby makes the control unit perform processing whereby an interactive service content signal is output from the signal generating circuit, and

an evaluation is made as to whether or not an instruction included in the interactive control data is to be applied on reproduction and this

instruction is made the subject of execution only when it is applied on reproduction.

80. A basic program recording medium wherein is recorded a basic
5 program for controlling a recording/reproduction device comprising: a
conversion circuit that selects packets relating to a desired service from a
supplied transport stream and outputs these as a converted stream including
interactive control data; a recording unit that records a converted stream
from the conversion circuit on a recording medium; means for reading that
10 reads a converted stream recorded on a recording medium; a decoder that
separates and outputs an elementary stream and interactive control data
from the converted stream that is read; a signal generating circuit that
receives the elementary stream from the decoder and instructions from a
control unit and that generates a service content signal; a control unit that
15 controls the operation of the decoder; and an operator control handling unit
that accepts a control input from the operator;

the basic program which is recorded being for causing a control unit to
perform processing whereby an image signal for control purposes is
generated based on the interactive control data and is supplied to the signal
20 generating circuit, and whereby the control program or condition data
included in the interactive control data is interpreted and, based on control
input from the operator, control is exercised at least such as to alter the
interactive control data that is separated by the decoder, thereby making the
control unit perform processing whereby an interactive service content
25 signal is output from the signal generating circuit, and

an evaluation is made as to whether or not an instruction contained in
the interactive control data is to be applied on reproduction, and this
instruction is made the subject of execution only if it is to be applied on
reproduction.

81. A recording medium on which are recorded at least packet-multiplexed interactive control data of an elementary stream, PAT and PMT selected from packets relating to a desired service in a transport stream wherein said PMT is constituted by extracting from all the PMT information in the transport stream only information associated with said elementary stream relating to the desired service wherein in said interactive control data a plurality of mutually associated interactive control data form a group, this group being repetitively recorded a plurality of times, and said interactive control data includes conditions or instructions applied only on reproduction or conditions or instructions that are not applied only on reproduction.

82. A recording medium wherein is recorded interactive control data for performing control as interpreted by a basic program or jointly with said basic program in respect of a recording/reproduction device comprising: a conversion circuit that selects packets relating to a desired service from a supplied transport stream and outputs these as a converted stream including interactive control data; a recording unit that records a converted stream from the conversion circuit on a recording medium together with recording environment information; a reading unit that reads a converted stream recorded on a recording medium; a decoder that separates and outputs an elementary stream and interactive control data from the converted stream that is read; a signal generating circuit that receives the elementary stream from the decoder and instructions from a control unit and that generates a service content signal; a control unit that controls the operation of the decoder; a recording unit that records said basic program whereby the operation of the control unit is determined; and an operator control handling unit that accepts a control input from the operator;

said interactive control data, interpreted by said basic program or jointly with said basic program, generating an image signal for control purposes and being supplied to the signal generating unit

whereby processing is made to be performed in which a service content signal having interactive capability is output from the signal generating circuit under control such that at least the interactive control data that are separated by the decoder are altered in accordance with control input from the operator, and said interactive control data includes conditions or instructions applied only on reproduction or conditions or instructions that are not applied only on reproduction.

83. A carrier wave that carries a transport stream including interactive control data for realizing content and interactive capability, said interactive control data constituting a group of a plurality of interactive control data that are mutually associated, this group being transmitted in repetitive fashion a plurality of times, and said interactive control data includes in said navigation program conditions or instructions applied only on reproduction or conditions or instructions that are not applied only on reproduction.